UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MARK A. LILLIS

Appeal 2007-4103
Application 10/065,373
Technology Center 1700

Decided: November 26, 2007

Before EDWARD C. KIMLIN, BRADLEY R. GARRIS, and THOMAS A. WALTZ, *Administrative Patent Judges*.

KIMLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 11-16 and 21-32.

Claim 11 is illustrative:

11. A process for operating an electrochemical system, comprising:

calibrating a hydrogen gas detector by

passing a hydrogen-free gas through a first conduit to the hydrogen detector, wherein the hydrogen gas detector generates a first signal;

flowing a mixture comprising a known quantity of hydrogen gas from a hydrogen/water separator through a second conduit to the hydrogen gas detector, wherein the hydrogen gas detector generates a second signal corresponding to a percentage of the hydrogen gas in the mixture; and

calibrating the hydrogen gas detector based upon the first and second signals, introducing water to an electrolysis cell;

producing hydrogen;

separating hydrogen from water in the hydrogen/water separator;

introducing environmental gas disposed around electrochemical system components to the hydrogen gas detector; and

determining the hydrogen concentration in the environmental gas.

The Examiner relies upon the following references as evidence of obviousness:

Ono (as translated)	JP 401-066,537	Mar. 13, 1989
Bhandari	6,006,582	Dec. 28, 1999
Andrews	6,036,827	Mar. 14, 2000

Appellant's claimed invention is directed to a process for operating an electrochemical system that produces hydrogen from an electrolysis cell. A hydrogen gas detector is used to determine the hydrogen concentration of the environmental gas disposed around the electrochemical system. The

hydrogen gas detector is calibrated while passing a hydrogen-free gas to the detector to generate a first signal, flowing a mixture comprising a known quantity of hydrogen gas to the detector to generate a second signal, and calibrating the detector based on the first and second signals. According to Appellant's Specification, it was known in the art to use hydrogen detectors to monitor leakage of hydrogen gas from a system and it was known that the recalibration of such hydrogen detectors is periodically required. Appellant's Specification states that "[p]resently, calibration is performed manually" (Spec.:1, last full sentence).

Appealed claims 11-16 and 21-32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Andrews in view of Ono and Bhandari.

Appellant fails to present an argument that is reasonably specific to any particular claim on appeal. Accordingly, all the appealed claims stand or fall together with claim 11.

We have thoroughly reviewed each of Appellant's arguments for patentability. However, we are in complete agreement with the Examiner's reasoned analysis and application of the prior art, as well as his cogent and thorough disposition of the arguments raised by Appellant. Accordingly, we will adopt the Examiner's reasoning as our own in sustaining the rejection of record, and we add the following for emphasis only.

At the outset, we note that although Appellant presents the instant invention as an automatic calibration process for a hydrogen detector that is an improvement over the manual processes performed by the admitted prior art, the Examiner properly notes that "most of the instant claims do not

preclude manual calibration of the detector when coupled with the electrolyzer taught in Andrews" (Ans. 14, first para.). Significantly, claim 11 on appeal, with which all the appealed claims stand or fall, encompasses manual and automatic calibrations of a hydrogen detector.

There is no dispute that Andrews, like Appellant, discloses an electrochemical system for producing hydrogen by introducing water into an electrolysis cell which includes a hydrogen detector for determining the presence of hydrogen in the environment in the vicinity of the electrochemical system. As acknowledged by the Examiner, Andrews is silent regarding any recalibration of the hydrogen detector. However, as acknowledged by Appellant and evidenced by Ono and Bhandari, it was known in the art to conduct periodic recalibrations of a hydrogen detector for assuring accurate readings for a dangerous gas. Hence, based on the state of the prior art, we are convinced that it would have been obvious for one of ordinary skill in the art to manually or automatically recalibrate the hydrogen detector of any system that generates hydrogen gas, including the system of Andrews.

Ono, as explained by the Examiner, discloses the calibration of a hydrogen detector by first introducing a reference gas of known hydrogen concentration to the detector to establish a correlation between the concentration of hydrogen and the output signal of the gas detector. Ono then introduces a sample gas into the detector and uses a calibration curve formula stored in a data processor to determine the hydrogen concentration of the sample gas. Ono does not disclose the claimed step of passing a

hydrogen-free gas through the detector to generate a first signal. However, the Examiner properly points out that Bhandari evidences that it was known in the art to subject hydrogen detectors to routine calibration that includes the step of introducing "clean air," i.e., gas free of hydrogen, to first establish a base line for the calibration. Consequently, we concur with the Examiner that it would have been obvious for one of ordinary skill in the art to use a hydrogen-free gas in the calibration of a hydrogen detector in order to establish a base line of the calibration curve. We agree with the Examiner's reasoning that "[m]easuring a larger number of known concentration points in the calibration of a detector, including zero hydrogen, or clean air, will give a more accurate calibration of the detector over a broad range of concentrations" (Ans. 9, last full sentence). Appellant has not refuted the Examiner's further explanation that "[a] clean air calibration of the signal will allow for adjustment of the signal due to detector drifting, contamination and the like" (Ans., sentence bridging pages 9-10). While Appellant assails the lack of motivation for modifying the system of Andrews, we find that one of ordinary skill in the art would have been motivated to periodically recalibrate the hydrogen detector of Andrews for obvious safety reasons, and the prior art reflects that such a recalibration would utilize known concentrations of hydrogen gas, including the zero concentration of clean air, to provide a more accurate signal (*see* Ans. 10, first full para.).

Appellant submits that Andrews mentions using the detector to detect hydrogen in the environment but does "not even acknowledge a need to

calibrate the detector" (Br. 6, penultimate para.). However, it is not necessary for a finding of obviousness that Andrews explicitly state what was well known in the art at the time of filing the present application, namely, it is necessary to periodically recalibrate a hydrogen detector to ensure the safety of the environment surrounding a hydrogen-producing system. Indeed, as noted above, Appellant acknowledges that the need for recalibrating hydrogen detectors was known in the art.

As a final point, we note that Appellant bases no argument upon objective evidence of nonobviousness, such as unexpected results, which would serve to rebut the inference of obviousness established by the applied prior art.

In conclusion, based on the foregoing and the reasons well stated by the Examiner, the Examiner's decision rejecting the appealed claims is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(vi)(effective Sept. 13, 2004).

AFFIRMED

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